

CLAIMS

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A1

1. An isolated nucleic acid ~~comprising~~ a nucleotide sequence encoding an *S. epidermidis* polypeptide selected from the group consisting of SEQ ID NO: 3773 - SEQ ID
5 NO: 7344.

2. A recombinant expression vector comprising the nucleic acid of claim 1 operably linked to a transcription regulatory element.

10 3. A cell comprising a recombinant expression vector of claim 2.

4. A method for producing an *S. epidermidis* polypeptide comprising culturing a cell of claim 3 under conditions that permit expression of the polypeptide.

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A2

15 5. An isolated nucleic acid ~~comprising~~ a nucleotide sequence encoding an *S. epidermidis* polypeptide or a fragment thereof, said nucleic acid selected from the group consisting of SEQ ID NO: 1 - SEQ ID NO: 3772.

20 6. A recombinant expression vector comprising the nucleic acid of claim 5 operably linked to a transcription regulatory element.

7. A cell comprising a recombinant expression vector of claim 6.

25 8. A method for producing an *S. epidermidis* polypeptide comprising culturing a cell of claim 7 under conditions that permit expression of the polypeptide.

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9. A probe comprising a nucleotide sequence consisting of at least eight contiguous nucleotides of a nucleotide sequence selected from the group consisting of SEQ ID NO: 1 - SEQ ID NO: 3772.

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10. An isolated nucleic acid comprising a nucleotide sequence of at least eight nucleotides in length, wherein the sequence is hybridizable to a nucleic acid having a nucleotide sequence selected from the group consisting of SEQ ID NO: 1 - SEQ ID NO: 3772.

11. A vaccine composition for prevention or treatment of an *S. epidermidis* infection comprising an effective amount of a nucleic acid of claim 5 and a pharmaceutically acceptable carrier.

12. A vaccine composition of claim 11, further comprising an adjuvant.

13. A vaccine composition of claim 11, further comprising one or more additional active ingredients.

14. A method of treating a subject for *S. epidermidis* infection comprising administering to a subject a vaccine composition of claim 11, such that treatment of *S. epidermidis* infection occurs.

15. A method of claim 14, wherein the treatment is a prophylactic treatment.

16. A method of claim 14, wherein the treatment is a therapeutic treatment.

17. A recombinant or substantially pure preparation of an *S. epidermidis* polypeptide or a fragment thereof, wherein said polypeptide is selected from the group consisting of SEQ ID NO: 3773 - SEQ ID NO: 7544.

18. A vaccine composition for prevention or treatment of an *S. epidermidis* infection comprising an effective amount of an *S. epidermidis* polypeptide of claim 17 and a pharmaceutically acceptable carrier.

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19. A vaccine composition of claim 18, further comprising an adjuvant.

20. A vaccine composition of ~~claim 18~~, further comprising one or more additional active ingredients.

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21. A method of treating a subject for *S. epidermidis* infection comprising administering to a subject a vaccine composition of claim 18, such that treatment of *S. epidermidis* infection occurs.

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22. A method of claim 21, wherein the treatment is a prophylactic treatment.

23. A method of claim 21, wherein the treatment is a therapeutic treatment.

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24. A method for detecting the presence of a *Staphylococcus* nucleic acid in a sample comprising:

(a) contacting a sample with a nucleic acid of claim 5 under conditions in which a hybrid can form between the probe and a *Staphylococcus* nucleic acid in the sample; and

(b) detecting the hybrid formed in step (a), wherein detection of a hybrid indicates the presence of a *Staphylococcus* nucleic acid in the sample.

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25. A computer readable medium having recorded thereon the nucleotide sequences depicted in SEQ ID NO: 1 - SEQ ID NO: 3772 or fragments thereof.

26. A computer based system for identifying fragments of the *Staphylococcus* genome of commercial importance comprising the following elements;

- a) a data storage means comprising the nucleotide sequences SEQ ID NO: 1 - SEQ ID NO: 3702 or fragments thereof,
- b) a search means for comparing a target sequence to the nucleotide sequences of the data storage means of step (a) to identify homologous sequences, and;
- 10 c) a retrieval means for obtaining said homologous sequences(s) of step (b).

27. A computer based system for identifying fragments of the *Staphylococcus* plasmids of commercial importance comprising the following elements;

- 15 a) a data storage means comprising the nucleotide sequences SEQ ID NO: 3703 - SEQ ID NO: 3772 or fragments thereof,
- b) a search means for comparing a target sequence to the nucleotide sequences of the data storage means of step (a) to identify homologous sequences, and;
- c) a retrieval means for obtaining said homologous sequences(s) of step (b).
- 20 (b).

28. A method of identifying commercially important nucleic acid fragments of the *Staphylococcus* genome comprising the step of comparing a database comprising the nucleotide sequences SEQ ID NO: 1 - SEQ ID NO: 3772 or fragments thereof with a target sequence to obtain a nucleic acid molecule comprised of a complementary nucleotide sequence to said target sequence, wherein said target sequence is not randomly selected.

29. A method of identifying commercially important nucleic acid fragments of the *Staphylococcus* plasmids comprising the step of comparing a database comprising the nucleotide sequences SEQ ID NO: 3703 - SEQ ID NO: 3772 or fragments thereof with a target sequence to obtain a nucleic acid molecule comprised of a complementary nucleotide
5 sequence to said target sequence, wherein said target sequence is not randomly selected.

30. A method for identifying an expression modulating fragment of the *Staphylococcus* genome comprising the step of comparing a database comprising the nucleotide sequences SEQ ID NO: 1 - SEQ ID NO: 3772 or fragments thereof with a target
10 sequence to obtain a nucleic acid molecule comprised of a complementary nucleotide sequence to said target sequence, wherein said target sequence comprises sequences known to regulate gene expression.

31. A method for identifying an expression modulating fragment of the *Staphylococcus* plasmid comprising the step of comparing a database comprising the nucleotide sequences SEQ ID NO: 3703 - SEQ ID NO: 3772 or fragments thereof with a target sequence to obtain a nucleic acid molecule comprised of a complementary nucleotide
15 sequence to said target sequence, wherein said target sequence comprises sequences known to regulate gene expression.

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